NJ Department of Transportation
Office of Maritime Resources
Sediment Decontamination Demonstration Program

Project Update for **ENDESCO Clean Harbors, LLC**
Cement-Lock Technology -- Last Updated: February, 2004

ENDESCO Clean Harbors (ECH) is testing a thermal destruction technology – called Cement-Lock – that takes raw dredged material, blends it with mineral modifiers and vitrifies

the mixture at temperatures in the range of 2400 to 2600 degrees F, creating a glassy granular product called "Ecomelt". Ecomelt can either be used directly as fill, or more likely, ground into a powder for use as a pozzolan in commercial-grade blended cement. Cement-Lock technology was developed by the Gas Technology Instituite of Des Plaines, IL and Unitel Technologies of Mount Prospect, IL. Benchtop studies performed under the EPA/WRDA partnership resulted in a cement product that met or exceeded relevant ASTM standards and was actually lower in heavy metals than ordinary Portland cement. The benefit of the high temperatures is that all the organic compounds are destroyed and heavy metals are incorporated into the glass-like Ecomelt matrix, rendering them unleachable and inert. Any pollutants that escape the Ecomelt Generator (rotary kiln melter) are either destroyed or captured in an extensive air pollution control system that includes a secondary combustion chamber, lime injection system, baghouse and activated carbon bed.

The ECH Cement-Lock pilot project (above) is located in a fully industrial site at the International Matex Tank Terminal facility in Bayonne, NJ. Under the pilot contract, valued at $1.2 million, ECH will treat 300 tons of dewatered dredged material from the Stratus Petroleum berth in northern Newark Bay. The project will evaluate the success of treatment, efficiency of treatment and generate a mass balance to confirm the fate of all of the pollutants in the sediment.

ECH initiated operations at their pilot plant in Nov 2003 (above right). The initial operation was successful and resulted in the generation of Ecomelt (left). However, due to freezing conditions (the plant is not winterized) and a blockage in the drop-out box caused by premature cooling of the Ecomelt at the end of the kiln, the process had to be stopped in December. ECH plans to install several new features on the plant to ensure smooth operation when they restart in the spring. In the meantime, OMR is negotiating a contract for a demonstration project that, assuming the pilot is successful, will treat an additional approximately 3500 cubic yards from another berth in northern Newark Bay.